

602 REGENTS' INVESTMENT CONSULTANT ASSET ALLOCATION STUDY

Committee on Investments /
Investment Advisory Committee
August 17, 2004

Qualifications

Background

- Founded 1984
- Independent; wholly owned by principals of the firm; financially sound
- Stable growth clients and personnel

→ Investment expertise

- Definitive source on performance measurement
- Numerous publications on wide variety of pension investment subjects
- International reputation

→ Consulting experience

- Responsible for investment programs with assets in excess of \$300 billion
- "Richards & Tierney is Large Sponsor's Choice" Thomson Financial Survey
- Experts in investment risk measurement and risk control/budgeting

→ Relationship oriented

- Senior, experienced consultants (Principals) responsible for client relationships
- Fund sponsor experience; superior communication skills
- Results oriented clients have succeeded in meeting their investment objectives

Qualifications

- ♦ Thomas M. Richards, CFA, Co-founder and Principal: Previously, Mr. Richards was with the Harris Bank where he designed and implemented the trust department's investment analytics service. Prior to joining the bank, Mr. Richards was responsible for the investment operations of a large corporate plan sponsor. Mr. Richards has published a variety of articles in pension finance literature and has been a frequent speaker at investment conferences and seminars. Mr. Richards has more than 30 years experience in pension and investment management. He received his A.B. in Mathematics from Bucknell University and M.S. in Finance (with distinction) from The Pennsylvania State University.
- ♦ David E. Tierney, Ph.D., Co-founder and Principal: Formerly, Dr. Tierney was Administrative Manager, Investments for Amoco Corporation's pension fund. He directed and coordinated the activities of the investment managers, controlled the pension fund's accounting and auditing functions, measured and analyzed the performance of the fund's investment managers, and conducted research into improved methods of pension management. Dr. Tierney received a B.S. in Engineering Science (with distinction) from Northwestern University and an M.S. and Ph.D. in Applied Statistics from the University of Wisconsin. In addition, he taught at the University of Chicago, Graduate School of Business. He is recognized as the originator of the "Completeness Fund" concept and quadrant mapping of portfolios.
- ♦ Charles J. McPike Principal: Formerly, Mr. McPike was President of North Shore Systems, Inc., a computer design firm providing consultation in systems and development in institutional investment oriented firms. Mr. McPike previously worked for A.G. Becker as a Vice President in the Funds Evaluation Group. Mr. McPike has more than 20 years of experience in the pension and investment management business. He received a B.S. in Physics and Mathematics and an M.S. in Physics from the University of Illinois.
- Ann Posey Principal: Formerly, Ms. Posey was Vice President of Kemper Asset Management and was responsible for client service for Kemper's institutional clients. Prior to Kemper, Ms. Posey was Manager of Pension Investments for Household International, where she was responsible for coordinating the investment program for Household's defined benefit plans. Ms. Posey received a B.S. from Purdue University and an M.B.A. in Finance from DePaul University (with distinction).
- ♦ John C. Simmons, CFA Manager, Investment Analysis: Prior to joining R&T, Mr. Simmons was an analyst with Arthur Andersen, LLP. Mr. Simmons graduated *cum laude* with a B.A. in English Literature and has an M.B.A. with an emphasis in Financial Trading & Practice from Saint Xavier University in Chicago. Mr. Simmons is a member of Mensa.

Qualifications

- ♦ Kevin D. Drucker Manager, Investment Analysis: Prior to joining R&T, Mr. Drucker was a Senior Consultant with Arthur Andersen, LLP. He was elected to Phi Beta Kappa and graduated *magna cum laude* with a B.A. degree in Finance and Economics (with distinction) from the University of Illinois in Champaign, Illinois. In addition, he fulfilled all of the College requirements for a second degree in Economics at that time. Kevin also has an M.B.A. in Accounting and Economics from the University of Chicago. He serves as Advisor and Director of several prominent Chicagoland civic and non-profit organizations. He has successfully completed the NASD Series 7, 63 and 65 Examinations, and is a CFA Level III Candidate.
- Michael N. Lindh, CFA, CPA Director, Investment Analysis and Fixed Income Research: Formerly, Mr. Lindh was a Principal and Senior Quantitative Research Analyst at Harris Investment Management. His 20 years of investment research management experience with the Harris Bank organization involved the development of quantitative risk models, portfolio construction, equity and fixed income analytical systems, and he was involved in asset allocation strategies. Prior to this position, Mr. Lindh was responsible for investment accounting systems at Chicago Title & Trust Company. Mr. Lindh received a B.A. in Economics and Accounting from Augustana College, an M.A. in Economics from Northwestern University, and an M.B.A. from the University of Chicago. He is a director of the Investment Analysts Society of Chicago.
- **★ Edward P. Kunzman Director, Investment Analysis:** Joined the firm in 1994. He received a B.A. in Philosophy from Conception College in northwest Missouri and three graduate degrees from St. Mary of the Lake University in Mundelein, Illinois.
- ♦ Sarah M. Weber Performance Analyst: Joined the firm in 2004. Prior to joining R&T, Ms. Weber was an assistant in the Indexes Department of Morningstar. Ms. Weber graduated from the University of Chicago with a B.A. in Economics and Political Science.
- Sandra K. Weiskirch, CFA Special Projects: Joined the firm in 1996. Prior to joining R&T, she was the Manager of performance Measurement at Harris Trust's Investment Consulting Services. She was elected to Phi Beta Kappa and graduated *magna cum laude* with a B.A. degree in Mathematics from St. Olaf College in Northfield, Minnesota. Subsequently, she received an M.B.A. from the University of Chicago with concentration in Finance and International Business.

Representative Fund Sponsor Client List

Air Products & Chemicals General Mills, Inc.

BGC Retirement Plan Hoffmann-La Roche

California Public Employees' Retirement System Minnesota State Board of Investment

COPIC Insurance Company Owens-Illinois, Inc.

DaimlerChrysler Corporation Philips Electronics

Dean Foods Target Corporation

Delta Air Lines The Toledo Blade

Evangelical Lutheran Church in America The Toledo Museum of Art

GMP Employees Retiree Trust

University of Minnesota Foundation

General Electric, Co.

Published Research

Forthcoming:

"Evaluating Portfolio Performance," Maginn, Tuttle, Managing Investment Portfolios (Warren, Gorham & Lamont)

Published Research:

- T.M. Richards, "Alternatives to Broad Market Indexes," *AIMR Conference Proceedings Benchmarks and Attribution Analysis*, November 8, 2000, pp. 13-20
- S.K. Weiskirch and J.C. Flaherty, "Out of Style," *Indexes: The Journal of Index Issues in Investment*, April-June, 2000, pp. 16-21
- J.V. Bailey and D.E. Tierney, "Controlling Misfit Risk in Multiple-Manager Investment Programs," *The Research Foundation of The Institute of Chartered Financial Analysts*, March 1998
- J.V. Bailey and D.E. Tierney, "Opportunistic Investing," Journal of Portfolio Management, Spring 1997, pp. 69-78
- K.J. Winston & J.V. Bailey, "Investment Policy Implications of Currency Hedging," *Journal of Portfolio Management*, Summer 1996, pp. 50-57.
- D.E. Tierney and J.V. Bailey, "Controlling Misfit Through the Use of Dynamic Completeness Funds," in Robert A. Klein and Jess Lederman (eds.), *Equity Style Management: Evaluation and Selecting Investment Styles*, Irwin Professional Publishing: Chicago, 1995.

Published Research (cont.)

- T.M. Richards, "The Missing Piece: Completeness Fund Fortifies Portfolio," *Corporate Cashflow Magazine*, Fall 1994.
- J.V. Bailey and D.E. Tierney, "Gaming Manager Benchmarks," *Journal of Portfolio Management*, Summer 1993, pp. 37-40.
- K.J. Winston, "The 'Efficient Index' and Prediction of Portfolio Variance," *Journal of Portfolio Management*, Spring 1993, pp. 27-34.
- J.V. Bailey, co-author with Gordon J. Alexander and William F. Sharpe, *Fundamentals of Investments*, Second Edition, Prentice Hall: Englewood Cliffs, 1993.
- J.V. Bailey, "Evaluating Benchmark Quality," Financial Analysts Journal, May/June 1992, pp. 33-39.
- J.V. Bailey, "Are Manager Universes Acceptable Performance Benchmarks," *Journal of Portfolio Management*, Spring 1992, pp. 9-13.
- D.E. Tierney and K.J. Winston, "Using Generic Benchmarks to Present Manager Styles," *Journal of Portfolio Management*, Summer 1991, pp. 33-36.
- J.V. Bailey, "Why Include Cash in Your Benchmark?", Investing, Spring 1991, pp. 31-39.
- J.V. Bailey, "Investment Policy: The Missing Link," in Frank Fabozzi (eds), *Pension Fund Investment Management*, Probus: Chicago, 1990, pp. 11-26.

Published Research (cont.)

- J.V. Bailey, "Some Thoughts on Performance-Based Fees," *Financial Analysts Journal*, July/August 1990, pp. 31-40.
- D.E. Tierney and K.J. Winston, "Defining and Using Dynamic Completeness Funds to Enhance Total Fund Efficiency," *Financial Analysts Journal*, July/August 1990, pp. 49-54.
- J.V. Bailey, T.M. Richards, and D.E. Tierney, "Benchmark Portfolio: Concept and Design," in Frank Fabozzi (eds.), *Managing Institutional Assets*, Probus: Chicago, 1989, pp. 245-275.
- J.V. Bailey, T.M. Richards, and D.E. Tierney, "Benchmark Portfolios and the Manager/Plan Sponsor Relationship, "Journal of Corporate Finance, 1988, pp. 25-32.
- J.V. Bailey and R.D. Arnot, "Cluster Analysis and Manager Selection," *Financial Analysts Journal*, November/December 1986, pp. 20-28.
- T.M. Richards, "The Role of the Active Manager for the Pension Fund," *Journal of Portfolio Management*, Spring 1979, pp. 43-47.
- T.M. Richards, contributor to *The Prudent Man Making Decisions Under ERISA*, by Bruce W. Marcus, 1978, ESP Corporation.
- T.M. Richards, "International Diversification for U.S. Pension Funds: Pros and Cons," *Pension World*, June 1978, pp. 10-14.

Published Research (cont.)

T.M. Richards and R.F. Smith, "Asset Mix and Investing Strategy," *Financial Analysts Journal*, March/April 1976, pp. 67-71.

Working Papers:

"Caveat Emptor: Episode 5"

"Caveat Emptor"

"The R&T VAM® Graph"

"The R&T Approach to Plan Sponsor Performance Evaluation

Part I: Performance Measurement

Part II: Performance Attribution"

"Fundamentals of Investment Policy"

"Manager Continuation Policy"

"Creating Better Benchmarks"

"Cash & Company"

"Benchmark Portfolio Construction"

"Why Benchmark Portfolios"

Services - Investment Consulting

♦ Investment Policy Guidelines

- Mission statement.
- Statement of investment objectives
- Risk tolerance statement

♦ Investment Risk Decision

- Financial strength of sponsor
- Funding status of plan
- Risk aversion of fiduciaries

♦ Asset Allocation Policy

- Identification of asset categories
- Specification of market targets
- Specification of percent allocations

♦ Investment Management Implementation

- Active vs passive
- Manager selection and retention
- Benchmarks and manager structure

Performance Evaluation (Measurement, Attribution and Appraisal)

- Fund sponsor level (macro)
- Investment manager level (micro)
- Quality control charts

♦ Risk Management

- Identification and measurement of investment risks
- Selection of "risk budget"
- Risk Control Fund "DCF®"

♦ Analytical Software: R&T Toolbox

- Style analysis
- Value of Active Management "VAM®"
- Correlation analysis

♦ General Consultation

- Attendance at all required meetings
- Special research, educational seminars
- Due diligence

Fund Sponsor ABC – Integrating *Policy*, Structure and Performance

Actual and Policy	Asset Allocation ((as of December	31, 2003)
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Asset Category	Actual (\$)	Actual (%)	Policy (%)	Benchmark
A. Domestic Equity	\$5,061,454,145	34.94	35.00	Wilshire Investable
B. International Equity	\$3,034,608,796	20.95	20.00	AC World Ex-US Free
C. Fixed Income	\$3,391,297,593	23.41	25.00	75% Lehman Aggregate/ 25% Lehman High-Yield
D. Alternative Assets	\$2,475,736,943	17.09	20.00	Alternative Asset
E. Short Term Cash	\$14,214,861	0.10	0.00	90-Day US Treas Bills
F. Tactical Asset Allocation	<u>\$510,691,153</u>	<u>3.52</u>	<u>0.00</u>	Custom
Total Fund	\$14,488,003,491	100.00%	100.00%	

Fund Sponsor ABC – Integrating Policy, Structure and Performance

Asset Allocation Policy and Investment Structure (as of December 31, 2003)

Asset Category	Actual (\$)	Actual	Policy	Benchmarks
A. Domestic Equity	\$5,061,454,145	34.94%	35.00%	Wilshire Investable
Manager 1	1,218,606,452	24.08	25.00	Custom - Style Indx Comb
Manager 2	661,199,987	13.06	13.00	S & P 500 Index
Manager 3	1,518,615,434	30.00	30.00	Custom - Rtn Style
Manager 4	981,397,584	19.39	19.00	Custom - Security Based
Manager 5	681,634,689	13.47	13.00	Custom - Security Based
B. International Equity	3,034,608,796	20.95	20.00	AC World Ex-US Free
Manager 6	1,272,581,856	41.94	42.50	AC World Ex-US Free
Manager 7	1,265,097,048	41.69	42.50	EAFE
Manager 8	496,929,893	16.38	15.00	Emerging Markets - Free
C. Fixed Income	3,391,297,593	23.41	25.00	75% Leh Agg / 25% Leh Hi-Yld
Manager 9	1,008,150,232	29.73	27.00	Lehman Agg
Manager 10	635,345,588	18.73	23.00	Lehman Agg
Manager 11	856,037,397	25.24	25.00	Lehman Hi Yield Index
Manager 12	866,214,761	25.54	25.00	Custom - Mkt Indx Comb
Manager 13	25,549,616	0.75	0.00	Custom - Mkt Indx Comb
D. Alternative Assets	2,475,736,943	17.09	20.00	Alternative Assets
Managers 14-44	2,475,736,943	100.00	100.00	Custom
E. Short Term Cash	14,214,861	0.10	0.00	90 - Day US T- Bills
Manager 45	14,214,861	100.00	100.00	90 - Day US T- Bills
F. Tactical Asset Allocation	510,691,153	3.52	0.00	Custom
Manager 46	510,691,153	<u>100.00</u>	<u>100.00</u>	Custom
Total Fund	\$14,488,003,491	100.00%	100.00%	

Properties of a Valid Benchmark

- **◆** <u>U</u>nambiguous
- **→** <u>M</u>easurable
- **◆** <u>I</u>nvestable
- **◆ A**ppropriate
- ◆ Specified in advance
- ◆ **R**eflective of current investment opinion
- **→** AIMR US

Fund Sponsor ABC – Integrating Policy, Structure and *Performance*

\$2,961,167,923

\$14,488,003,492

Performance Attribution - Total Fund

(January 1, 1989 to December 31, 2003)

	Impacts (\$)	Cumulative (\$)	Impacts (%)	Cumulative (%)
1. Net Contributions (Preservation of Capital)	\$2,283,153,534	\$5,244,321,457	0.00%	0.00%
2. Risk-Free Asset (Preservation of Purchasing Power)	4,063,661,865	9,307,983,322	4.79%	4.79%
3. Investment Policy (Real Return)	3,971,310,035	13,279,293,356	4.83%	9.85%
4. Style Bias (Mgrs Bnmks)	86,985,336	13,366,278,692	-0.10%	9.74%
5. Managers' Contribution (Value-Added)	1,130,338,131	14,496,616,823	1.31%	11.18%
6. Allocation Tactics (Rebalancing Strategy)	(8,613,331)	14,488,003,492	-0.11%	11.06%

Payoff per Dollar (\$) Mgmt Fee

Ending Market Value =

Beginning Market Value

\$2.37

Fund Sponsor ABC – Integrating Policy, Structure and *Performance*

Fund Sponsor ABC
Summary of Changes in Total Fund Net Assets
December 31, 2003 (180 Months)

Performance Impact (\$) Within Asset Category	Investment Policy	Style Bias <u>Mgrs Bnmks</u>	Manager's <u>Contribution</u>	Total Impact
Domestic Equity	2,068,207,092	8,529,704	457,578,930	2,534,315,726
International Equity	243,491,003	36,951,301	555,880,692	836,322,996
Fixed Income	667,735,304	86,163,011	116,682,832	870,581,147
Alternative Assets	859,647,075	2,397,650	(69,021)	861,975,705
Short Term Cash	132,229,561	(47,056,330)	264,697	85,437,928
Tactical Asset Overlay	0	0	0	0
	3,971,310,035	86,985,336	1,130,338,131	5,188,633,501

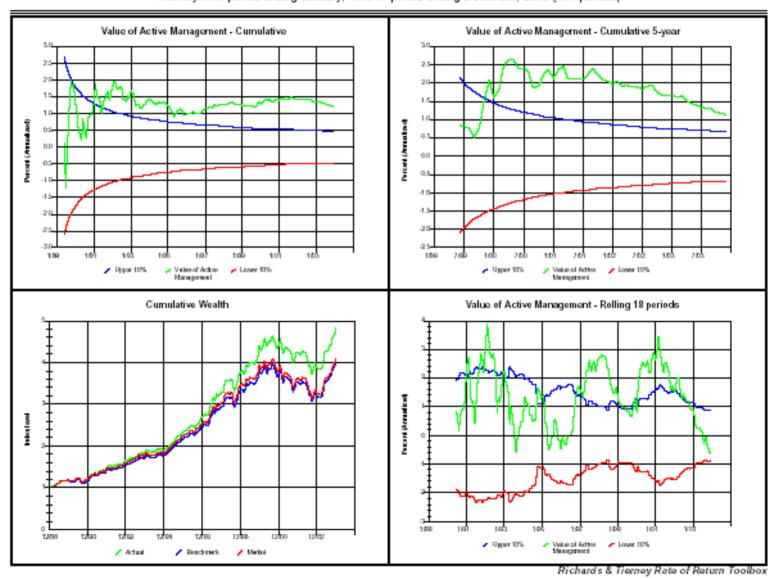
Fund Sponsor ABC – Integrating Policy, Structure and *Performance*

Plan Sponsor ABC
Summary Of Plan Sponsor Allocation Tactics
December 31, 2003 (180 Months)

Performance Impact (\$) Within Asset Category	Allocations To Asset Category	Allocations To Mgr Benchmarks	Allocations To Investment Mgrs	Total Impact
Domestic Equity	(71,151,357)	9,089,162	(1,424,500)	(63,486,694)
International Equity	61,928,712	(679,008)	(36,931,326)	24,318,378
Fixed Income	(32,908,411)	(2,083,034)	(3,697,636)	(38,689,081)
Alternative Assets	(87,997,669)	(1,584,997)	(1,311,737)	(90,894,403)
Short Term Cash	(22,263,348)	5,994,189	34,245,470	17,976,311
Tactical Asset Overlay	(124,836,626)	0	266,998,786	142,162,159
	(277,228,700)	10,736,312	257,879,058	(8,613,331)

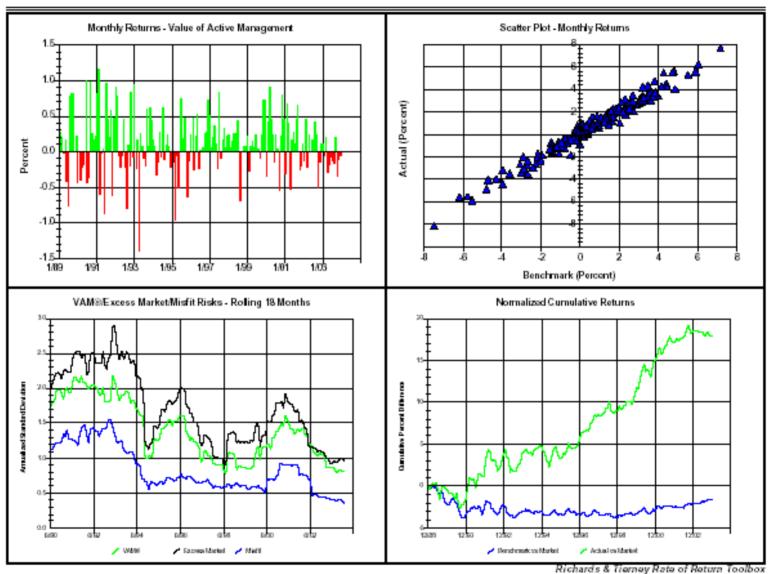
Quality Control Charts

Fund Sponsor ABC - Total Fund Monthly from period ending January, 1989 to period ending December, 2003 (180 periods).



Quality Control Charts

Fund Sponsor ABC - Total Fund Monthly from period ending January, 1989 to period ending December, 2003 (180 periods)



Fund Sponsor ABC – Integrating Policy, Structure and *Performance*

Investment Performance - Total Returns, Value-Added Returns, Value-Added Dollar Impacts (Quarter ending December 31, 2003)

_	Past Quarter			Past Year			Past 5 Years		
Asset Category	Total (%)	<u>VAM (%)</u>	VAM(\$m)	Total (%)	<u>VAM (%)</u>	VAM(\$m)	Total (%)	<u>VAM (%)</u>	VAM(\$m)
A. Domestic Equity	11.74	(0.91)	(43,693)	31.89	(0.85)	(48,233)	1.70	0.44	54,698
Manager 1	8.73	(2.36)	(29,284)	22.21	(3.64)	(50,650)	(2.08)	(1.61)	(85,276)
Manager 2	12.40	0.27	1,372	29.04	0.33	1,467	N/A	N/A	N/A
Manager 3	11.79	0.05	377	33.30	2.06	24,802	(4.12)	1.58	102,686
Manager 4	13.14	(1.32)	(11,201)	32.11	0.18	(2,803)	5.58	0.46	23,570
Manager 5	14.49	(0.58)	(3,888)	52.62	(3.94)	(19,446)	16.13	0.91	29,486
B. International Equity	15.50	(1.44)	(41,373)	37.32	(3.55)	(87,701)	6.33	3.92	344,429
Manager 6	15.48	(1.39)	(16,576)	35.34	(4.29)	(44,439)	1.59	0.04	13,169
Manager 7	15.45	(1.39)	(16,557)	33.75	(3.49)	(35,429)	8.32	8.38	312,007
Manager 8	15.70	(1.79)	(8,639)	53.62	(1.70)	(8,173)	N/A	N/A	N/A
C. Fixed Income	1.57	0.11	3,407	10.13	0.16	5,612	6.77	0.32	32,177
Manager 9	0.32	0.01	315	4.28	0.17	739	6.89	0.25	6,819
Manager 10	0.52	0.21	1,292	5.17	1.02	6,214	6.80	0.16	4,543
Manager 11	5.98	0.07	628	23.81	(4.00)	(26,969)	5.54	0.51	14,075
Manager 12	(0.42)	0.17	1,429	8.30	3.79	25,786	7.23	0.29	6,596
Manager 13	(0.54)	0	0	2.35	0	0	5.74	0	0
Total Fund	8.51	(0.59)	(80,363)	23.93	(0.99)	(129,609)	5.08	1.00	469,511

VAM = **Value** of Active Management

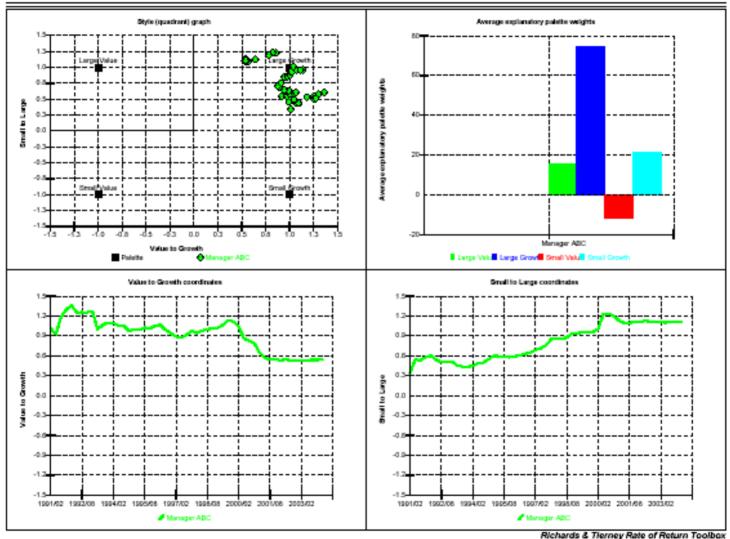
Services - Performance Evaluation – *Attribution* **Manager ABC**

Economic Sector Performance Attribution & Analysis Actual vs Benchmark (quarter ending December 31, 2003)

Economic Sectors	Avg Actual Wt (%)	Avg Benchmark <u>Wt (%)</u>	Cum Actual <u>Return</u>	Cum Benchmark <u>Return</u>	Sector <u>Alloctn</u>	Sector x <u>Selection</u>	Stock Selection	Value <u>Added</u>
Basic Materials		1.22		14.63	-0.04			-0.04
Capital Goods	2.95	3.57	4.60	13.64	-0.03	0.04	-0.29	-0.28
Consumer Durables	0.20	0.91	5.84	15.85	-0.03	0.03	-0.08	-0.08
Consumer Non-Durables	51.03	43.91	7.10	9.55	-0.12	-0.16	-0.98	-1.26
Energy		1.98		12.25	-0.02			-0.02
Financial	20.49	19.85	11.49	10.82	0.00	-0.01	0.12	0.11
Miscellaneous		0.09		25.52	-0.01			-0.01
Technology	25.17	21.30	11.15	15.48	0.04	-0.11	-0.82	-0.88
Transportation		2.49		14.03	-0.06			-0.06
Utilities		1.69		20.30	-0.13			-0.13
Cash & Equivalents	0.16	3.00	0.24	0.24	0.29			0.29
Total Buy / Hold+C&E Trading & Other Total Portfolio	100.00	100.00	8.76 -0.03 8.73	11.36 0.00 11.36	-0.10	-0.21	-2.03	-2.33 -0.03 -2.36

Investment Style Characteristics

Palette: Russell 1000 Value/Growth, Russell 2000 Value/Growth Using monthly data from period ending February, 1991 to period ending March, 2004 (158 periods, used in groups of 3)



Affirmation of Manager Selection Process

→ Reviewed External Manager Selection Process

- RFP
- Minimum Requirements
- Quantitative and Qualitative Screening Criteria

→ Analyzed Portfolio Risk and Return Characteristics

- Value-Added Return and Risk
- Benchmark Quality Characteristics
- Reporting Consistency

→ R&T Affirms Manager Selection Process

- Sound Decision Active Management
- Sound Approach
- Reasonable Expectations

R&T Work Plan

♦ Asset Allocation Review

- UCRP
- GEP

→ Investment Policy Statement

- Review and Comment
- Assist in Risk Budgeting Process

→ Investment Manager Allocation

- Review and Comment
- Integrate Risk, Return Characteristics into Manager Structure

→ Performance Evaluation

- Gather Performance Accounting Information (Valuations and Flows)
- Obtain Portfolio Composition Data
- Gather Investment Policy and Structure Information

→ Install R&T Analytical Software

Summary

♦ Quality Organization

- Experts in all aspects of pension investment matters
- Experienced with large and sophisticated fund sponsors

♦ Superior Consultants

- Senior, experienced consultants (Principals)
- Practical and technical expertise
- Relationship oriented

◆ Understand Client's Investment Consulting and Performance Evaluation Needs

- Capable of providing value-added consulting and performance measurement services
- Focus on Client's specific issues and interests

♦ Sound Approach

• Associated with successful investment programs

Presentation to The Investment Committee of The Regents of University of California



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